

# THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR METALS

Volume XV

AUGUST, 1942

No. 7

## 400 Attend Tri-Chapter Meeting

Reported by Mario Martellotti  
Research Engineer  
Cincinnati Milling Machine Co.

An all-day session on "Selection and Heat Treatment of National Emergency Steels" brought double the anticipated attendance to the Tri-Chapter meeting of the A.S.M., held in Cincinnati on June 5.

In addition to large groups from the Cincinnati, Columbus and Dayton Chapters, the 400 in attendance included representatives from Indianapolis, Muncie, Cleveland, Canton, Massillon, Warren, Chicago, Pittsburgh, Detroit, Washington, St. Louis, Schenectady, Syracuse, New Jersey, Wisconsin, and West Virginia.

The meeting was arranged under the Chairmanship of A. J. Smith of the Lunkenheimer Co., and was opened by William Ball, superintendent of Edna Brass and Mfg. Co., the new chairman of the Cincinnati Chapter. The technical sessions were capably led by Hans Ernst, research director of the Cincinnati Milling and Grinding Machines, Inc.

### Nelson, Harrison Send Wires

The presence of National Secretary Bill Eisenman contributed to the outstanding success of the Tri-Chapter Meeting.

Of particular significance were telegrams from War Production Board—one from Donald Nelson (reproduced alongside) and another from W. M. Harrison, director of production, W.P.B., as follows:

TECHNICAL AND SCIENTIFIC MEN SUCH AS YOURSELVES HAVE CONTRIBUTED AND WILL CONTINUE TO CONTRIBUTE MUCH TO THE WAR EFFORT. THE EXCHANGE OF INFORMATION AND EXPERIENCES HERE TODAY, PARTICULARLY IF FOLLOWED THROUGH BACK IN PLANTS AND LABORATORIES, WILL ACCELERATE THE BENEFITS OF YOUR WORK. THIS IS A WAR OF EQUIPMENT AND METALS. THE EFFECTIVENESS OF THEIR USE WILL IN LARGE PART DETERMINE THE RESULTS OF OUR WAR EFFORT.

### NE Steels Booklet Distributed

The exigencies of total war have forced the low alloy emergency steels upon American industry, and industry must learn to use these new steels. But it is encouraging to know that these steels are better in some respects than the steels we have been using in the past, and technical data on their physical characteristics.

(Continued on page 3)

## Women Trained for Work in Laboratories

Under the auspices of the Engineering, Science, and Management Defense Training, a group of 25 carefully selected young women are being trained at Columbia University for positions as metallographic laboratory technicians.

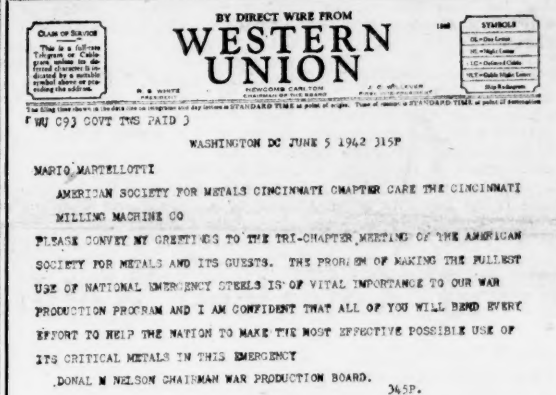
The training (a total of 60 hours combined lecture and laboratory work) consists of preparation of metallographic specimens by hand preparation methods, lead lap technique, and electrolytic polishing. Special techniques are taught, and extensive training is given in the principles of photography and photomicrography.

The course of instruction will be completed on August 30, and anyone desiring to learn more about the availability of these trained women may do so by communicating with G. L. Kehl, School of Mines, Columbia University, New York City.

## Speakers, Officials Congratulated by WPB Chiefs



Speakers and Officers at the Tri-Chapter Meeting of the Columbus, Dayton and Cincinnati Chapters Were, Left to Right, Howard Stagg and E. F. Davis, Speakers; A. J. Smith, Tri-Chapter Committee Chairman; William Ball, Chairman of the Cincinnati Chapter, Where the Meeting Was Held; Hans Ernst, Technical Chairman; Waldemar Naujoks, Speaker; Mario Martellotti, in Charge of Arrangements; and R. S. Archer, Speaker. Below is reproduced the telegram sent by WPB Chief Donald M. Nelson.



## Eleven Engineering Societies Are Represented on Louisville WPAC

A War Products Advisory Committee, in which all national engineering societies are represented, has been organized in Louisville, Ky., in compliance with a request from WPB Chief Donald Nelson that such groups be formed in all important war production centers.

John H. Romann, chief metallurgist, Tube-Turns, Inc., who represents the American Society for Metals on the Committee, has been elected chairman and Paul R. Oakes, representative of the War Production Board in Louisville, is secretary. John Bizot, test engineer, Reynolds Metals Co., is alternate representative

### A.S.M. Annual Meeting

To the Members of the A.S.M.: This is your official notice that the annual meeting of the American Society for Metals will be held in the Statler Hotel, Cleveland, on Wednesday morning, Oct. 14, 1942. All members of the Society in good standing are privileged to attend and vote.

W. H. Eisenman, Secretary,  
Cleveland, Ohio, August 15, 1942

tive of the A.S.M. on the Committee.

At the organizational meeting held June 19, representatives of the Army Ordnance Department, the Ninth Naval District, War Production Board, University of Louisville, and Louisville & Nashville Railroad were present, as well as representatives of the following engineering societies: American Society for Metals, American Society of Mechanical Engineers, American Society for Testing Materials, American Welding Society, American Institute of Electrical Engineers, American Society for Civil Engineers, American Society for Tool Engineers, Engineers and Architects Group of Louisville, American Chemical Society, American Society of Chemical Engineers, Society of Professional Engineers of Kentucky.

The Committee will be similar in nature to those which have been organized by the chapters of the American Society for Metals as local A.S.M. War Products Advisory Committees in that it will function as a source of technical assistance and

(Continued on page 3)

### Early Reservation of Hotel Rooms Urged

EARLIEST possible reservation of hotel rooms is urged for those planning to attend the National Metal Congress and Exposition in Cleveland the week of Oct. 12. To facilitate securing of adequate accommodations for everyone, a housing bureau has been set up under the direction of Edward C. Brennan, executive vice-president of the Cleveland Convention & Visitors Bureau, Terminal Tower, Cleveland.

Complete information concerning the hotels will be found in the reservation form appearing on page 8 of this issue of THE REVIEW.

## War Products To Dominate Metal Show

Thirty-seven papers have been accepted and approved by the Publication Committee of the American Society for Metals, for the big technical program scheduled as a part of the five-day National Metal Congress and Exposition in Cleveland the week of Oct. 12.

One of the features of the program will be a series of five lectures to be held at five o'clock each afternoon. Conducted by James P. Gill, chief metallurgist of Vanadium-Alloys Steel Co. and past president A.S.M., this series will deal with various phases of tool steels. Because of the tremendous importance of tool steels in the war program, the series will be of vital interest this year.

The tentative technical programs of the four participating societies are shown on pages 2 and 3. In addition there will be a series of group discussion meetings on substitutes, salvage, employee training, maintenance and other timely topics that will carry out the theme of the entire Metal Congress, namely, "Increased Production of War Products."

Government and War Production Board officials will participate in these discussions.

This war production theme will dominate the War Production Edition of the National Metal Exposition, to be held in conjunction with the Congress in Cleveland's Public Auditorium, according to A.S.M. Secretary W. H. Eisenman, who is managing director of the Metal Exposition.

"The 320 manufacturers who have already reserved 84% of the available display space are planning 100% educational exhibits," Mr. Eisenman said. "These displays will be veritable consulting offices where the industry can gather to get information that will help solve the important problems that confront us in this war of metals."

"The manufacturers who will share their experience and achievements at this meeting will make a real contribution to winning this battle of production with the Axis."



### Orchids

To Albert E. White, past president A.S.M., director of engineering research, University of Michigan, on his nomination as a manager of the American Society of Mechanical Engineers.

To Wayne I. Cockrell, on his promotion from a captain to the rank of major in the Detroit Ordnance District.

To General Alloys President Harry Harris, on the dedication of a new foundry for the manufacture of war equipment.

To Clifford W. Gehrum, troubleshooting metallurgist at Republic Steel Corp., on his election to the Canton (Ohio) City Council.

To Handy & Harman, of Bridgeport, Conn. and New York, manufacturers and fabricators of precious metals, on the celebration of its 75th anniversary.

To officials and employees of Jessop Steel Co., Washington, Pa., on the unqualified approval of their war production voiced by Admiral William Carleton Watts.

## Chapters Have Special Meetings On the NE Steels

About half of the local chapters of the American Society for Metals have already scheduled special summer meetings on the new National Emergency steels, in response to a request by the War Production Board. Typical is the meeting of the Indianapolis Chapter reported on page 7.

Most of these meetings are so planned as to utilize local talent to explain the types, properties and fabrication of these new substitute steels. At the Chicago Chapter meeting, held on August 6, for instance, seven speakers discussed various aspects of the subject, as follows:

COORDINATION OF ENGINEERING EFFORTS IN PRODUCTION OF WAR MATERIALS—Robert C. Brown, Jr., consulting technical director, Contract Division, War Production Board.

THE NATIONAL EMERGENCY STEELS: TYPES, AND BACKGROUND OF THEIR DEVELOPMENT—Albert L. Kaye, manager, alloy bureau, metallurgical division, Carnegie-Illinois Steel Corp.

JOMINY END-QUENCH HARDENABILITY TEST—Harry B. Knowlton, chief metallurgist, gas power engineering department, The International Harvester Co.

DEEP HARDENING NATIONAL EMERGENCY STEELS—Roy D. Allen, assistant chief metallurgist, Republic Steel Corp., Chicago District.

SEMI-HARDENING NATIONAL EMERGENCY STEELS—(Continued on page 2)

### Papers Preprinted; Order Before Sept. 7

ALL of the papers which will be presented at the technical sessions of the American Society for Metals during the National Metal Congress will be preprinted for distribution to members. These are listed on page 3 and must be ordered before Sept. 7.

The Society will print only 10% in excess of the number of orders for preprints in the office on press date and this excess 10% will be sent out as long as it lasts, but the Society will assume no obligation of forwarding preprints after this 10% excess supply has been exhausted.

## THE REVIEW

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RAY T. BAYLESS, Editor  
 M. R. HYSLOP, Managing Editor

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 Volume XV No. 7

### Chapters Have Special Meetings on NE Steels

(Continued from page 1)

**GENCO STEELS**—Interpretation of S-Curve Data—Mortis J. Day, metallurgist, alloy division, Carnegie-Illinois Steel Corp.

**CARBURIZING TYPE NATIONAL EMERGENCY STEELS**—Alfred S. Jameson, works metallurgist, International Harvester Co., West Pullman Plant.

**THE POSITION OF THE STEEL WAREHOUSE IN THE NATIONAL EMERGENCY STEELS PROGRAM**—Greswold Van Dyke, manager, special steel department, Joseph T. Ryerson & Son, Inc.

John L. Burns, Chapter chairman, was chairman of the meeting, and Harold L. Geiger of International Nickel Co. was technical chairman.

Twenty-one states supply materials for the steel industry.

### Report Idle Furnace Capacity at Once!

ANY idle furnace capacity for heat treating purposes should be reported immediately to the Heat Treating Equipment Unit, War Production Board, Room 4520 Social Security Bldg., Washington, D. C.

According to Bradley Stoughton, national president A.S.M., who is chief of the Heat Treating Equipment Unit, this information is needed in order that a survey may be made of idle equipment which can be used to meet the bottleneck existing in this activity.

The request for such a survey comes from the Aircraft Scheduling Unit representing the air forces of the United States and Great Britain.

## JOHN WYZALEK



JOHN F. WYZALEK, a charter member and past chairman of the New Jersey Chapter A.S.M., died suddenly on August 8. He was 47.

John Wyzalek grew up with the heat treating industry, watching (and helping) the art of casehardening mature to a science. He started with Hyatt Bearings Division of General Motors Corp. in 1913, and five years later at the age of 23 was made chief metallurgist, the position he held up to the time of his death.

Always active in A.S.M. affairs, he was currently chairman of the New Jersey Chapter War Products Advisory Committee, and was a past member of the Constitution and By-Laws Committee of the national society. He also participated in A.S.T.M. committee work and was a member of the American Iron and Steel Institute.

Thomas G. Dougall

THOMAS G. DOUGALL, Chicago district sales manager for the Columbia Tool Steel Co., died June 9, 1942.

Mr. Dougall was well-known for his contributions on the cutting of metals. He had years of shop experience before becoming affiliated with the Columbia Tool Steel Co. with whom he was connected for 16

## Feature of A.I.M.E. Program Will Be Symposium on Rare Metals

The Iron and Steel Institute of Metals Divisions of the American Institute of Mining and Metallurgical Engineers will hold their annual fall meeting in connection with the National Metal Congress at Cleveland Oct. 12, 13, and 14.

Despite the pressure on members of the two Metals Divisions to turn out war material, the tentative technical program gives promise of being of exceptionally high quality.

The feature of the Institute of Metals Division sessions will be an all-day symposium on rare and precious metals. This symposium is being arranged by E. M. Wise, vice-

chairman of the Division's Rare and Precious Metals Committee. At least eight short papers will be presented, and plans are on foot for several surprises during this symposium and discussion.

In addition to the symposium there will be a number of interesting and important papers on constitution, especially of aluminum and magnesium-rich alloys, lead-rich alloys and copper-rich alloys.

The Iron and Steel Division program is noteworthy this year for papers on production. There will be one session on the blast furnace and on the raw materials used in the manufacture of pig iron and one on the physical chemistry of steel making.

An interesting investigation on the bleeding of ingots will be reported and there will be at least one paper on hardenability.

From the standpoint of the war effort and of the attempts the iron and steel industry is making to get along with inferior grades of scrap, a very important paper will be presented by J. W. Halley of the Inland Steel Co. entitled, "The Effect of Tin on the Properties of Plain Carbon Steel."

As usual, the joint Division Dinner will be held on Tuesday evening.

### Purdue Sponsors Defense Training Course

Defense training courses in engineering, science and management are being sponsored by the United States Office of Education and are offered throughout the State of Indiana by Purdue University. District offices for these defense training courses are maintained in seven Indiana cities, including Muncie, where EUGENE E. EVERETT is district representative.

Mr. Everett was formerly process engineer and metallurgist for the A. F. Holden Co.

### National Forge Wins First Star for Navy 'E'

The All-Navy "E" burgee which flies from its special flagpole at the plant of the National Forge & Ordnance Co. at Irvine, Warren County, Pa., now has its first white star against the traditional Navy field of blue.

This new honor was announced by Rear Admiral H. A. Wiley on May 23 in recognition of sustained excellence in production during the six months following the award of the Navy Ordnance "E" to National Forge on Nov. 22. The All-Navy "E" was also awarded to National Forge on April 17.

The White Star award carries with it the privilege of flying the All-Navy "E" burgee for a succeeding six-months period. Then, as reviewed by the Navy Board for Production Awards, an additional White Star will be granted as evidence of continued outstanding industrial service in time of war.

years in charge of Chicago sales.

He was a member of the Superintendents' and Foremen's Club and the Chicago Chapter, American Society for Metals.

## Tentative Technical Program, American Welding Society

### Monday Morning, October 12

Session on Training of Welding Operators and Qualifications  
 TRAINING OF WELDING FOREMEN, by F. H. Achard, Consolidated Edison Co. of New York, Inc.  
 INSTRUCTION METHODS IN WELDING DEVELOPED BY U. S. OFFICE OF EDUCATION, by H. K. Hogan, U. S. Office of Education.

### Monday Afternoon, October 12

Session on Fatigue and Impact  
 FATIGUE STRENGTH OF METAL SUBJECTED TO COMBINED STRESSES, by L. H. Donnell, Illinois Institute of Technology.  
 FATIGUE STRENGTH OF COMMERCIAL BUTT WELDS IN CARBON STEEL PLATES, by W. M. Wilson, University of Illinois.  
 FATIGUE TESTS OF FULL THICKNESS PLATES WITH AND WITHOUT BUTT WELDS, by E. C. Hulse, The Babcock & Wilcox Co.  
 IMPACT STRENGTH OF HIGH ALLOY STEEL WELDS, by E. C. Chapman, Combustion Engineering Co.

Session on War Production  
 SOME SPECIAL APPLICATIONS OF FLAME HARDENING, by Stephen Smith, Air Reduction Sales Co.  
 HIGH QUALITY WELDING—VERTICAL AND OVERHEAD POSITIONS WITH ALTERNATING CURRENT, by H. O. Westendorp, General Electric Co.  
 CONSERVATION AND EFFECTIVE USE OF EQUIPMENT AND SUPPLIES FOR WELDING AND CUTTING, by H. Ulmer, The Linde Air Products Co.  
 WELDING GUN MOUNTS, by W. B. Lair, York Safe and Lock Co.

### Monday Evening, October 12

Motion Picture Films  
 THE INSIDE OF WELDING, by General Electric Co.  
 THE WELDING OF ALUMINUM, by Aluminum Co. of America.

### Tuesday Morning, October 13

Session on Weldability of Steel  
 COOLING RATES AS AFFECTING WELDABILITY, by R. D. Stout and G. E. Doan, Lehigh University.  
 EFFECTS OF COOLING RATE ON THE PROPERTIES OF ARC WELDED JOINTS, by W. F. Hess, Rensselaer Polytechnic Institute.  
 WELD QUENCH GRADIENT TESTS, by W. H. Bruckner, University of Illinois.

Session on Aircraft Welding (Fuselage)  
 WELDING OF AIRPLANE PROPELLER BLADES, by C. A. Liedholm, Curtiss-Wright Corp.  
 WELDING OF NEW TYPES OF ALLOY STEELS IN AIRCRAFT STRUCTURES, by A. R. Lytle, Union Carbide and Carbon Research Laboratories.  
 EFFECT OF CURRENT ON THE WELDING OF X4130 AIRCRAFT TUBES, by W. T. Tiffin, University of Oklahoma.

### Tuesday Afternoon, October 13

Session on Weldability of Steel  
 BEAD HARDNESS AND BEAD BEND TESTS ON CARBON-MANGANESE STEELS, by O. E. Harder and C. B. Voldrich, Battelle Memorial Institute.  
 WELDABILITY OF CARBON-MANGANESE STEELS, by C. E. Jackson, Naval Research Laboratories.  
 JOMINY END-QUENCH TESTS ON CARBON-MANGANESE STEELS, by G. A. Timmons, Climax Molybdenum Co.  
 T-BEND TESTS OF CARBON-MANGANESE STEELS, by L. C. Bibber and J. Heuschkel, Carnegie-Illinois Steel Corp.

Session on Aircraft Welding (Sheet)  
 SPOT WELDING IN AIRCRAFT STRUCTURES, by E. S. Jenkins, Curtiss-Wright Corp.  
 STANDARDS AND RECOMMENDED PRACTICES AND PROCEDURES FOR SPOT WELDING ALUMINUM ALLOYS, by G. S. Mikhailov, Chairman, Aircraft Welding Standards Committee.  
 ARC WELDING OF MAGNESIUM ALLOYS, by W. S. Loose and A. R. Orban, Dow Chemical Co.  
 WELDING IN AIRCRAFT, by Francis H. Stevenson, Vega Aircraft Corp.

Session on Gas Cutting  
 GAS CUTTING IN STEEL MILLS, by S. D. Baumer, Air Reduction Sales Co.  
 IMPROVED METHODS OF MACHINE FLAME CUTTING, by H. E. Rockefeller, The Linde Air Products Co.  
 FACTORS AFFECTING THE ACCURACY OF MACHINE CUTTING, by Howard Hughey and A. H. Yoch, Air Reduction Sales Co.

### Wednesday Morning, October 14

Session on Resistance Welding  
 REFRIGERANT COOLED SPOT WELDING ELECTRODES, by F. R. Hensel, E. I. Larsen and E. F. Holt, P. R. Mallory & Co.  
 SPOT WELDING OF HARDENABLE STEELS, by W. F. Hess and D. C. Hertschaft, Rensselaer Polytechnic Institute.  
 UNUSUAL RESISTANCE WELDING DEVELOPMENTS AND OPERATIONS, by R. T. Gillette, General Electric Co.  
 RESISTANCE WELDING TRENCH MORTAR PIN ASSEMBLY, by J. H. Cooper, Taylor-Winfield Corp.

Session on Production Welding  
 WELDING WITH ALUMINUM BRONZE, by Clinton E. Swift, Ampco Metal, Inc.  
 ADAPTING AUTOMATIC ELECTRIC WELDING TO ROUTINE PRODUCTION, by J. M. Keir, The Linde Air Products Co.  
 WELDED STEEL TUBING AND ITS APPLICATION IN WAR PRODUCTION, by H. S. Card, Formed Steel Tube Institute.

### Wednesday Afternoon, October 14

Session on Resistance Welding  
 THE SPOT WELDING OF NAX HIGH TENSILE STEEL, by C. R. Schroder, Great Lakes Steel Corp.

APPLICATION OF COPPER OXIDE RECTIFIERS FOR RESISTANCE WELDING, by R. L. Briggs, Thomson Gibbs Electric Welding Co.

THE EFFECT OF WELD SPACING ON THE STRENGTH OF SPOT WELDED JOINTS, by R. Della-Vedova and M. M. Rockwell, Lockheed Aircraft Corp.  
 PREPARATION OF ALUMINUM ALLOYS FOR PRODUCTION SPOT WELDING, by T. E. Piper, Northrop Aircraft, Inc.

Session on Welding of Ordnance  
 CONSERVATION AND SUBSTITUTION OF CRITICAL MATERIALS IN FILLER METALS, by A. N. Kugler, Air Reduction Sales Co.  
 MANUAL AND AUTOMATIC WELDING OF HEAVY PLATE OF HARDENABLE ALLOYS, by L. A. Danse, Cadillac Motor Car Co.  
 DEVELOPMENTS IN CAST IRON WELDING RODS AND ELECTRODES, by R. J. Franklin, Chicago Hardware Foundry Co.  
 ELECTRIC WELDING OF MOBILE ARTILLERY GUN CARRIAGES, by G. E. Campbell, Pettibone-Muliken Corp.

Session on Shipbuilding  
 SUGGESTED METHODS WHICH WILL INCREASE WELDING PRODUCTION AND DECREASE WELDING COSTS, by J. F. Lincoln, Lincoln Electric Co.  
 DISTORTION AND SHRINKAGE PROBLEMS IN SHIPS AND OTHER LARGE STRUCTURES, by Lamotte Grover, Air Reduction Co.  
 MOTOR BOAT CONSTRUCTION AND SMALL SHIPS, by W. E. Whitehouse, Defoe Shipbuilding Co.  
 APPLICATION OF WELDING IN SUBMARINE CONSTRUCTION, by E. H. Ewert, Electric Boat Co., and R. D. West, Manitowoc Shipbuilding Co.

### Thursday Morning, October 15

Session on Aircraft Welding  
 UTILITY CHARACTERISTICS OF AIRCRAFT ELECTRODES, by C. B. Voldrich and R. D. Williams, Battelle Memorial Institute.  
 RESULTS OF SURVEY ON CURRENT ARC WELDING PRACTICE IN AIRCRAFT INDUSTRY, by Maurice Nelles, Chairman, Western Aircraft Welding Committee.  
 COPPER WELDING FOR AIRCRAFT, by T. V. Buckwalter, Timken Roller Bearing Co.

Session on Non-Destructive Tests and Inspection  
 CORRELATION OF METALLOGRAPHIC AND RADIOGRAPHIC EXAMINATION OF SPOT WELDS IN ALUMINUM ALLOYS, by Dana W. Smith and Fred Keller, Aluminum Co. of America.  
 THE MAGNETIC POWDER METHOD FOR INSPECTING WELDMENTS AND CASTINGS FOR SURFACE DEFECTS, by Carleton Hastings, Watertown Arsenal.  
 RADIOGRAPHIC INSPECTION OF WELDED ARMOR PLATES AND CASTINGS, by Don M. McCutcheon, Ford Motor Co.  
 VISUAL INSPECTION OF ARC WELDS, by W. L. Warder, Watertown Arsenal.



# A.S.M. Tentative Convention Program — List of Preprints

## Monday Morning, October 12

1. EFFECT OF ELEMENTS IN SOLID SOLUTION ON HARDNESS AND RESPONSE TO HEAT TREATMENT OF IRON BINARY ALLOYS, by C. R. Austin, Pennsylvania State College.
2. THIRD ELEMENT EFFECTS ON HARDENABILITY OF A PURE HYPER-EUTECTOID IRON-CARBON ALLOY, by C. R. Austin, Pennsylvania State College, W. G. Van Note, North Carolina State College, and T. A. Prater, Pennsylvania State College.
3. THE "A" RANGE IN SOME IRON-COBALT-TUNGSTEN ALLOYS, by W. P. Sykes, General Electric Co.

### Simultaneous Session

4. THE EFFECT OF HARDNESS ON THE MACHINABILITY OF SIX ALLOY STEELS, by O. W. Boston and L. V. Colwell, University of Michigan.
5. CARBURIZING CHARACTERISTICS OF 0.20 PER CENT CARBON ALLOY AND PLAIN CARBON STEELS, by G. K. Manning, Republic Steel Corp.
6. THE METALLOGRAPHY OF GALVANIZED SHEET STEEL USING A SPECIALLY PREPARED POLISHING MEDIUM WITH CONTROLLED PH, by D. H. Rowland and O. E. Romig, Carnegie-Illinois Steel Corp.

### Simultaneous Session

7. BURSTING TESTS ON NOTCHED ALLOY STEEL TUBING, by G. Sachs and J. D. Lubahn, Case School of Applied Science.
8. NOTCHED BAR TENSILE TESTS ON HEAT TREATED LOW ALLOY STEELS, by G. Sachs and J. D. Lubahn, Case School of Applied Science.
9. STRESS-STRAIN MEASUREMENTS IN THE DRAWING OF CYLINDRICAL CUPS, by E. L. Bartholomew, Jr., Massachusetts Institute of Technology.
10. FATIGUE STRENGTH OF NORMALIZED AND TEMPERED VERSUS AS-FORGED FULL SIZE RAILROAD CAR AXLES, by O. J. Horger and T. V. Buckwalter, Timken Roller Bearing Co.

## Tuesday Morning, October 13

11. THE END-QUENCH TEST: REPRODUCIBILITY, by Morse Hill, Wright Field.
12. THE END-QUENCH TEST: HARDENABILITY OF AIRCRAFT STEELS AND ITS REPRESENTATION, by Morse Hill, Wright Field.
13. HARDENABILITY CONTROL OF A ONE PER CENT CARBON STEEL, by G. R. Baitow and Gilbert Soler, Timken Roller Bearing Co.

### Simultaneous Session

14. THE ALPHA IRON LATTICE PARAMETER AS AFFECTED BY MOLYBDENUM, AND AN INTRODUCTION TO THE PROBLEM OF THE PARTITION OF MOLYBDENUM IN STEEL, by F. E. Bowman, R. M. Parke and A. J. Herzog, Climax Molybdenum Co.
15. THE EFFECT OF MOLYBDENUM ON THE ISOTHERMAL SUBCRITICAL TRANSFORMATION OF AUSTENITE IN EUTECTOID AND HYPER-EUTECTOID STEELS, by J. R. Blanchard, R. M. Parke and A. J. Herzog, Climax Molybdenum Co.
16. THE EFFECT OF MOLYBDENUM ON THE RATE OF DIFFUSION OF CARBON IN AUSTENITE, by J. L. Ham, R. M. Parke and A. J. Herzog, Climax Molybdenum Co.

### Simultaneous Session

17. THE METHOD OF THIN FILMS FOR THE STUDY OF INTERMETALLIC DIFFUSION AND CHEMICAL REACTIONS AT METALLIC SURFACES, by H. S. Coleman and H. L. Yeagley, Pennsylvania State College.

THE papers listed below will be preprinted for distribution to members of the A.S.M. in accordance with the regulations published on page 1. Please order only those preprints in which you are immediately interested because all papers listed for presentation will be printed, together with discussion, in future Society publications. ORDER BY NUMBER BEFORE SEPT. 7, 1942.

18. ON THE LOCATION OF FLAWS BY STEREO-RADIOGRAPHY, by James Rigby, Ford Motor Company of Canada.
19. THE FLUORESCENT PENETRANT METHOD OF DETECTING DISCONTINUITIES, by Taber de Forest, Magnaflex Corp.

## Thursday Morning, October 15

20. A METALLOGRAPHIC STUDY OF THE FORMATION OF AUSTENITE FROM AGGREGATES OF FERRITE AND CEMENTITE IN AN IRON-CARBON ALLOY OF 0.5 PER CENT CARBON, by T. G. Digges and S. J. Rosenberg, National Bureau of Standards.
21. INFLUENCE OF INITIAL STRUCTURE AND RATE OF HEATING ON THE AUSTENITIC GRAIN SIZE OF 0.5 PER CENT CARBON STEELS AND IRON-CARBON ALLOY, by T. G. Digges and S. J. Rosenberg, National Bureau of Standards.
22. THE MECHANISM AND THE RATE OF FORMATION OF AUSTENITE FROM FERRITE-CEMENTITE AGGREGATES, by G. A. Roberts, Vanadium-Alloys Steel Co., and R. F. Mehl, Carnegie Institute of Technology.

### Simultaneous Session

23. THE TANTALUM-CARBON SYSTEM, by F. H. Ellinger, General Electric Co.
24. INFLUENCE OF STRAIN RATE ON STRENGTH AND TYPE OF FAILURE OF CARBON-MOLYBDENUM STEEL AT 850, 1000 AND 1100 DEGREES FAHR., by R. F. Miller and G. V. Smith, U. S. Steel Corp., and G. L. Kehl, Columbia University.
25. RUPTURE TESTS AT 200 DEGREES CENT. ON SOME COPPER ALLOYS, by E. R. Parker and C. Ferguson, General Electric Co.

### Simultaneous Session

26. CORROSION OF WATER PIPES IN A STEEL MILL, by C. L. Clark, Timken Roller Bearing Co., and W. J. Nungesser, University of Michigan.
27. A STUDY OF THE IRON-RICH IRON-MANGANESE ALLOYS, by A. R. Troiano and F. T. McGuire, University of Notre Dame.
28. THE INDUCTION FURNACE AS A HIGH TEMPERATURE CALORIMETER AND THE HEAT OF SOLUTION OF SILICON IN LIQUID IRON, by John Chipman and N. J. Grant, Massachusetts Institute of Technology.

## Friday Morning, October 16

29. THE HARDENING OF TOOL STEELS, by Peter Payson and J. L. Klein, Crucible Steel Company of America.
30. THE KINETICS OF AUSTENITE DECOMPOSITION IN HIGH SPEED STEEL, by Paul Gordon and Morris Cohen, Massachusetts Institute of Technology, and R. S. Rose, Vanadium-Alloys Steel Co.
31. THE TEMPERING OF TWO HIGH-CARBON HIGH-CHROMIUM STEELS, by Otto Zmeskal, Illinois Institute of Technology, and Morris Cohen, Massachusetts Institute of Technology.

## 400 Attend Tri-Chapter Meeting On NE Steels, Hear Five Speakers

(Continued from page 1) characteristics and performance will be available shortly.

Data already on hand, on the NE 4000 Series, have been published in booklet form by the A.S.M., copies of which were distributed to those in attendance at the Tri-Chapter meeting.

### Hergenroether Opens Session

The technical session was opened by E. J. Hergenroether, of the Iron and Steel Branch, Metallurgical and Specification Sections, War Production Board; formerly of the Research and Development Division, International Nickel Co., Detroit. He spoke on the subject: "Emergency Steels—What They Are and Where and How They Should Be Used".

Mr. Hergenroether gave a general description of the new steels, the situation today in regard to strategic materials, and indicated the probable way in which these new steels can materially help in conserving strategic materials.

"Forging of Emergency Steels" was treated by Waldemar Naujoks, chief metallurgist, Steel Improvement and Forge Co., Cleveland, senior author of the Forging Handbook. He brought out the fact that there will not be any serious difficulty in the use of the NE steels in

forged parts. On the contrary, the forgeability of NE steels, with reduced alloy content, is improved, thus making possible a greater variety of design of forged parts.

Howard Staggs of Crucible Steel Co. of America urged in his talk on "Die Steels" not to be too worried about the substitute materials, for often the substitute turns out better than the thing it substitutes for.

A revision of heat treatment is necessary, for the emergency steels harden at lower temperatures and, for this reason, they should be properly marked. He told of the importance of complete transformation of austenite to martensite by cooling to really low temperatures, so as to have a minimum of retained austenite, before placing a piece of tool steel in the tempering furnace.

### Amola Used for Gears

"Gears of Emergency Steels" was the subject treated by E. F. Davis, chief metallurgist, Warner Gear Division, Borg-Warner Corp., Muncie, Ind.

Mr. Davis discussed the gear problem and stressed the importance of the "Amola" 4000 series steels in the present emergency. These steels, of low alloy content, were developed a long time ago and their physical characteristics are therefore known.

The meeting was brought to a fit-

ting conclusion with a talk on "Hardenability Considerations of the Emergency Steels" by A.S.M. Past President Robert S. Archer, chief metallurgist of Republic Steel Corp., Chicago. Mr. Archer mentioned that hardenability was chosen by the committee of the Iron and Steel Institute as the most important single criterion in the application of steels.

### We Can Do It, Says Archer

He pointed out that an important consideration in all hardenability testing, applicable also to NE steels, is the carbon content. There are two general factors in hardenability—(a) the intensity of the hardening, (b) the depth. Carbon controls the intensity of the hardening, but the effects of the alloy elements are not definitely known. Carbon is also a depth hardening element, and probably the most effective.

In concluding, Mr. Archer stated: "All the elements of the NE steels are old and tried elements—manganese, molybdenum, chromium—in just slightly different balances. We should not expect extremely radical results. We can use them, we can make them work, we are going to make them work."

The cooperation of the Cincinnati Chamber of Commerce in distributing the program and taking care of registration, and of the Netherlands Plaza Hotel, where the meeting was held, were contributing factors in the success of the meeting.

## Honor Sustaining Members and Past Chairmen

Reported by F. N. Meyer  
Technical Supervisor, Waterbury Branch  
American Brass Co.

New Haven Chapter—The May meeting, held on the 14th, was dedicated to the sustaining members and past chairmen whose combined efforts have contributed much toward the advancement and extension of the activities of the chapter.

The meeting was preceded by a dinner at the Hotel Garde and a coffee talk by John B. Tuttle of the Engineering Division, Esso Market. The subject of Mr. Tuttle's talk was "Some Unusual Uses of Petroleum."

The speaker of the evening was H. J. French, in charge of alloy steel and iron development of the International Nickel Co., Inc. Henry G. Keshian, metallurgist of The Chase Companies of Waterbury, Conn., served as technical chairman and introduced the speaker.

Mr. French discussed the "Hardenability and Heat Treatment of Steels" and with charts and diagrams explained the effect of various elements on grain size and hardenability.

He stressed the advantages of alloy steels in relation to section and hardenability characteristics, and referred particularly to the National

### Simultaneous Session

32. SOME ASPECTS OF STRAIN HARDENABILITY OF AUSTENITIC MANGANESE STEEL, by D. Nicoff, Republic Steel Corp.
33. THE PRECIPITATION REACTION IN AGED COLD-ROLLED ONE PER CENT CO-CU: ITS EFFECTS ON HARDNESS, CONDUCTIVITY, AND TENSILE PROPERTIES, by R. H. Harrington and L. E. Cole, General Electric Co.
34. THE EFFECT OF MODERATE COLD ROLLING ON THE HARDNESS OF THE SURFACE LAYER OF 0.34 PER CENT CARBON STEEL PLATES, by Harry K. Herschman, National Bureau of Standards.

### Simultaneous Session

35. THE METALLOGRAPHY OF COMMERCIAL MAGNESIUM ALLOYS, by J. B. Hess and P. F. George, The Dow Chemical Co.
36. STUDY OF INVERSE SEGREGATION SUGGESTS NEW METHOD OF MAKING CERTAIN ALLOYS, by M. L. Samuels, A. R. Elsea and K. Grube, Battelle Memorial Institute.
37. EFFECTS OF VARIOUS SOLUTE ELEMENTS ON THE HARDNESS AND ROLLING TEXTURE OF COPPER, by R. M. Brick, Yale University, D. L. Martin, General Electric Co., and R. P. Angier, Handy & Harman.

## Wire Association Program

### Monday Afternoon, October 12

- SALVAGE, by Speaker from War Production Board.  
MINES ABOVE GROUND—CONSERVATION OF SCRAP AND WASTE MATERIAL; Motion picture by Western Electric Co.  
RUBBER INSULATION SUBSTITUTES, by Speaker from Bell Telephone Laboratories.

### Tuesday Morning, October 13

- WIRE MILL SAFETY PRACTICES, by R. H. Ferguson, Republic Steel Corp.  
SCHEDULING AND PLANNING THE WIRE MILL FOR WAR PRODUCTION, by L. D. Seymour, Steel Co. of Canada, Ltd.

### Tuesday Afternoon, October 13

#### Wire Association Annual Luncheon

- GUEST SPEAKERS—Everett M. Dirksen, Congressman of Sixteenth District of Illinois, and Charles Copeland Smith, National Association of Manufacturers.

### Wednesday Morning, October 14

- TUNGSTEN CARBIDE APPLICATIONS, by A. MacKenzie, Carbonyl Co., Inc.

#### Mordica Memorial Lecture

- STEEL AND WIRE, by Louis H. Winkler, Bethlehem Steel Co.

### Wednesday Afternoon, October 14

- TRouble SHOOTING ON BRONZE AND STEEL WEAVING WIRE, by L. D. Granger, Wickwire Spencer Steel Co.  
WELDING ELECTRODES, by John W. Miller, Reid-Avery Co.

### Thursday Morning, October 15

- PICKLING OF ROD AND WIRE, by Walter G. See, Submerged Combustion Co. of America.  
ELECTRIC PATENTING OF WIRE, by John P. Zur, Trautwood Engineering Co.

Emergency steels put out by the American Iron and Steel Institute. He pointed out the characteristics of these steels and mentioned their suitability as possible substitutes for many S.A.E. types of steels in use.

## WPB Problems Outlined By President Stoughton

Reported by Albert J. Kleiner  
Hamilton Watch Co.

York Chapter—The annual meeting was held at the York Country Club Social Rooms with over 75 members and some guests present.

The meeting was opened by Chairman Harry Hartman who conducted the general business session and made his final report. He mentioned that over 15 members of the Chapter are engaged in teaching classes in metallurgy throughout the 50-mile radius covered by the York Chapter.

New officers were then installed formally by National President Bradley Stoughton. The members were favored by some very timely remarks upon the problems confronting the War Production Board, as explained by the President.

Movies showing the making of open-hearth steel from ore mine to finished strip and of the heat treatment of various tools and dies were shown by Charlie Courtney. These were obtained through the courtesies of the United States Steel Corp. and the Lindberg Engineering Co.

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WAR PRODUCTS ADVISORY COMMITTEES have been organized by the local chapters of the American Society for Metals as a *free* advisory service for the metal producing and metal working industries. These ASM-War Products Advisory Committees meet regularly. Every manufacturer of war products is invited to avail himself of these meetings.

If you have a problem, do not hesitate to get in touch with your local committee. Write or phone the coordinator, chairman, secretary or problem recorder as indicated in the list of committees on this page. Complete personnel of the committees has been published in previous issues of THE REVIEW.

The work of the ASM-War Products Advisory Committees is solely a contribution to present war-time efforts. You need not be a member of the American Society for Metals to obtain this service. *You will not be solicited for membership.* This is a sincere effort on the part of the chapters of the ASM to make a valuable contribution to "Ultimate Victory".

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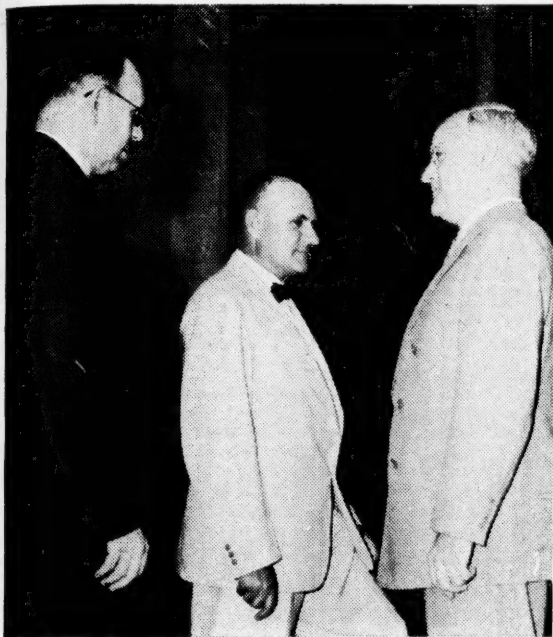
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## Heds of War Metallurgy Committee

Experts Answer  
100 Questions at  
NE Steels QuizReported by V. P. Beauchamp  
Hallow-Guthrie Co.

Golden Gate Chapter—In an effort to disseminate information pertaining to the National Emergency Steels, a special meeting was held on July 27, in accordance with the request from Donald M. Nelson of War Production Board to all A.S.M. Chapters.

The meeting was attended by approximately 250 men from the various phases of the metal industry. Six speakers gave 10-min. talks on various aspects of the NE steels. These talks were followed by an "Information Please" session, during which nearly 100 questions were submitted by the group and answered by experts.

The meeting owed much of its success to its publicity campaign, which included radio talks, six newspaper articles, and distribution of 1500 posters to men in the railroads, shipbuilding plants, steel companies and numerous defense plants in the San Francisco area.

On the program were W. P. Wallace of Columbia Steel Co., who gave a general account of development of the steels, and P. MacCaffrey of General Metals Corp., who spoke on hardenability.

J. V. Coulter of Coulter-Sibbett Steel Co. covered the deep hardening steels, J. Dorn of University of California the semi-thorough hardening steels, and R. Cole of Hall-Scott Motor Car Co. the carburizing steels.

R. Brown of Electro Metallurgical Sales Corp. ended the program by discussing the economics of substitution.

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50 Years in  
Steel Industry  
Celebrated

Commemorating the 50th anniversary of his association with the steel industry, friends of William P. Woodside, founder member and past president of the American Society for Metals, surprised him with a testimonial dinner at L'Aiglon in the Fisher Building, Detroit, on the evening of July 2. "The Climax Gang" (as Mr. Woodside calls the Climax laboratory staff members) was there in full force.

A. J. Herzig, chief metallurgist of Climax, acted as toastmaster. Members of the laboratory staff participated in the celebration by reading the congratulatory letters and telegrams received by Mr. Woodside during the day.

Among those sending felicitations were B. F. Fairless, president of U. S. Steel Corp., Fred M. Zeder, vice-president of Chrysler Corp., L. C. Gorham, Gorham Tool Co., Wm. J. Harris, Julius M. Gauss and Christian Pretz of Studebaker Corp., W. J. McKenzie and E. J. Brick of Youngstown Sheet & Tube Co., T. H. McGraw, Jr., Braeburn Alloy Steel Corp., J. E. Robinson, International Harvester, and many others.

## Associates Present Tools

Mr. Woodside's associates at the laboratory presented him with a full set of blacksmith tools, including a forge hammer and all the various gadgets—fullers, flatters, top and bottom swedges, etc.—all the tools that go to round out the modern, well-equipped blacksmith's shop. It is expected that he will use these tools to excellent advantage in the shop he has built at his farm near Holly, Mich., since he has never lost his hand at the trade he learned so painstakingly as a young man.

As detailed in the biographical appreciation published in METAL PROGRESS in November 1938, Bill Woodside began his career as an apprentice in the steel industry in his father's blacksmith shop in Port Arthur, Ont. in 1892.

## Organized Steel Treaters

His career since 1905, when he became steel salesman for Crucible Steel Co. of America, is well known since he was in contact with so many active steel treaters. These contacts gave him the idea that an association for the exchange of ideas and technical and practical information would be to the interest of all steel treaters and to industry as well.

Thus was conceived the organization so many of us know today as the American Society for Metals.

illustrate his points. A view was shown of an exhaustor attached to a draw furnace for taking off oil fumes for the few minutes while oil is being burned off from oil quenched parts.

A truck with a brick top was shown. Although this top is heavier than a steel plate it remains flat for a long time and can be easily repaired or replaced.

Mention was made of the installation of electric heating units on the door of electric furnaces, thus eliminating a cold spot at the door and giving needed extra space.

He spoke of a means of case carburizing with raw bone to get a deeper case at 1500° F. than could be secured from ordinary commercial compounds at that temperature. This avoids the distortion which usually occurs in casing at the higher temperatures.

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## From Blacksmith to Steel Expert



A.S.M. Founder Member W. P. Woodside, Now Celebrating 50 Years in the Steel Industry, Demonstrates With Another Old-Timer the Blacksmith Skill Which He Learned as a Young Man and Has Never Lost.

It all started with a group of 22 men who met at the Fellowcraft Club on Bill Woodside's invitation on the first Saturday evening in October, 1913.

The sentiment of many is best expressed in a telegram from the A.S.M. secretary, Bill Eisenman, read at the 50th anniversary dinner by Mr. Woodside's associate, V. A. Crosby, chairman-elect of the Detroit Chapter.

THE OFFICERS, TRUSTEES AND MEMBERS OF THE A.S.M. EXTEND TO YOU SINCERE CONGRATULATIONS ON THIS MOMENTOUS DAY WHICH MARKS THE GOLDEN ANNIVERSARY OF YOUR CONNECTION WITH THE METAL INDUSTRY. IT IS NOT PERMITTED TO EVERYONE TO ERECT A MONUMENT TO HIS ACHIEVEMENT, BUT THAT PRIVILEGE HAS BEEN GRANTED TO YOU IN THE A.S.M. CONTINUED GOOD LUCK.

W. H. EISENMAN

Mr. Woodside left Crucible in 1916 to go with the Studebaker Corp. His present connection with Climax Molybdenum Co. commenced in 1926.

It is hard to believe that in the 50-year span in the steel industry that Mr. Woodside knows so well, he has followed the ring of steel from the blacksmith's anvil (1893 model) to the mightiest forge shops in the nation today. His first-hand

experience bridges the gap between the coal fire and the multiple recording pyrometer that has wrought so many wonders in modern heat treating technique.

Nobody has ventured to call Bill Woodside "venerable"—he is not old enough for that and far too active. But a lot of water has gone over the dam of the steel industry these past 50 years and Bill Woodside has seen most of it and remembers it well. His own personal contribution, directly and indirectly, has played no small part in determining its flow—and raising that flow to a level of proficiency that is one of our greatest bulwarks against the forces of war that have broken loose in the world.

Even if there were no other reason—and there are many—that would be reason enough why his friends chose to pay signal honor to Bill Woodside on the occasion of his 50th anniversary with the steel industry.

A new electric furnace was recently installed and placed in operation 52 hr. after it was delivered at the plant of a steel company. The installation of a similar furnace by this company (two years ago required 166 hr.

## INSPECTION OF METALS

by Harry B. Publisher, Metallurgical Engineer, American Metal Treating Co., and Consulting Metallurgist, Ferry Cap and Set Screw Co., Cleveland, Ohio.

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## NE Steel Policies Are Outlined by Manufacturers

Reported by W. E. Ellsworth  
Claus S. Gordon Co.

position wanted. Ph.D. in Physical Chemistry with metallurgical experience. Nine years teaching metallurgy in engineering schools; six years varied industrial metallurgical work. Box 8-65.

### Reserve Hotel Rooms Thru Housing Bureau

Because of the great size to which the National Metal Congress has grown, an unsatisfactory hotel condition has existed in past years, caused by the hit and miss scheme of making hotel reservations.

The Cleveland hotels have guaranteed to the Metal Congress 4000 rooms. In order that our members may be assured of being properly taken care of and so that these rooms will be used exclusively for those in Cleveland attending these events, all reservations will clear through the Housing Bureau operated by the four cooperating societies. The mechanics of this bureau are being carried out by the Cleveland Convention and Visitors Bureau.

The very best attention will be given to all reservations and a special endeavor made to provide members with the type of accommodations they wish.

In the establishment of the Housing Committee the member's interest was paramount. Use the form on this page to make your reservation. Prompt mailing is urged.

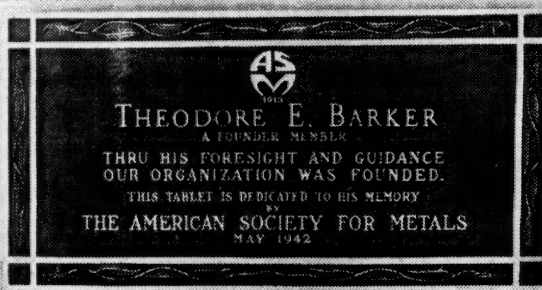
### Stonerod Heads Springfield WPAC

C. H. Stonerod, Box 665, Springfield, Mass., is chairman of the newly appointed War Products Advisory Committee of the Springfield Chapter A.S.M.

The committee meets on the first and third Monday of each month at the Sheraton Hotel, Springfield, Mass. Sub-chairmen of the committee are as follows:

Earl C. Albie, Vice-President, Moore Drop Forging Co.; Howard E. Boyer, Metallurgist, American Bosch Corp.; J. W. Burdick, Sales Representative, Allegheny Ludlum Steel Corp.; C. L. Carpenter, Cranville, Mass.; Allen J. Carruthers, Superintendent, Greenfield Tap & Die Corp.; B. G. Constantine, Sales Representative, Foxboro Co.; John F. Dolan, Sales Representative, Allegheny Ludlum Steel Corp.; M. J. Donachie, Engineer, George W. Prentiss Co.; F. R. Elliot, Assistant Superintendent, Westinghouse Electric & Mfg. Co.; Paul C. Farren, Metallurgist, Greenfield Tap & Die Corp.; George Fidgetwood, Springfield, Mass.; M. J. Gorman, President, Gorman Heating Co.; T. P. Jones, Assistant Metallurgist, Chapman Valve Mfg. Co.; R. R. LaPelle, Department Manager, Dempsey Industrial Furnace Co.; V. T. Malcolm, Metallurgist, Chapman Valve Mfg. Co.; George R. Morin, Materials Engineer, Jones & Lamson Machine Co.; A. W. Morris, Research Engineer, Morris Engineering Co.; R. M. Prouty, Metallurgist, Threadwell Tap & Die Co.; A. L. Shields, Section Engineer, Westinghouse Electric & Mfg. Co.; M. R. Utley, S. Willington, Conn.; R. E. Wiberg, Springfield, Mass.; F. W. Wilbur, Engineer, Heathath Corp.; A. W. Wood, Superintendent Process Control, Westinghouse Electric & Mfg. Co.

### Plaque for Grave of Founder Member



Bronze Tablet Placed at the Foot of the Grave of A.S.M. Founder Member Ted Barker. The Plaque was dedicated at Arlington Cemetery, Elmhurst, Ill., on July 11 by a group from the Chicago Chapter.

A single ton of cold-rolled strip steel will produce a million safety razor blades.

#### FOR SALE

Leeds & Northrup Electric Hardening Furnace Type No. 2F-30, Serial No. 139464. Potentiometer No. 135037. Address Box 8-1 American Society for Metals 7301 Euclid Ave., Cleveland, O.

### Place of Nitriding In War Products Program Shown

Reported by Arthur S. Coffinberry  
Assistant Professor of Metallurgy  
University of Notre Dame

Notre Dame Chapter—The final meeting of the year was addressed on the subject of "Nitriding and Its Industrial Applications" by Dr. Victor O. Homerberg, professor of metallurgy at Massachusetts Institute of Technology, and technical director of Nitralloy Corp.

Dr. Homerberg traced the development of nitriding from its early history, through successive advances in the knowledge of fundamental principles which it involves, to a clear and comprehensive picture of present day methods and equipment in nitriding practice.

He discussed applications of nitriding in relation to the properties it imparts to various steels, and its possibilities and limitations in various types of machinery. His examples were taken from a wide variety of industrial fields and included some references to highly interesting and important applications in the war production program. He explained a number of specific points of nitriding practice directly applicable to the problems of many chapter members who are concerned with this treatment in industries of the South Bend area. The interests of these members were further served by an extended and lively period of answers to questions which Dr. Homerberg generously provided at the close of his talk.

It was also voted to continue the subscriptions to METAL PROGRESS that have been furnished by the Notre Dame Chapter to ten high schools of this territory during the past five years. Encouraging reports have been received from the teachers of these schools, indicating that the magazine is of considerable interest to high school classes, that it is used by instructors for reading assignments, and that its presence in the school libraries results in a stimulation of interest in metallurgical fields of study.

### Savage Tool Builds New Plant and Lab

In line with government policy calling for decentralization of industry, the Savage Tool Co., formerly of Minneapolis, announces removal of its plant and offices to Savage, Minn.

The new plant is 85 by 225 ft., includes an ultra-modern engineering department, offices, employees' cafeteria, and an unobstructed factory space 80 by 200 ft. An interesting feature is the completely equipped metallurgical laboratory, to permit thorough inspection and analysis of all materials entering into the company's products.

For the past two years, Savage Tool Co. has produced the DoAll surface grinder and has centered its manufacturing efforts on this one type of machine tool.

However, Savage Tool will soon announce to the trade its entrance into the gage block field.

### Valves Today Meet Extreme Use Conditions

Reported by Ellis Blade  
Consulting Engineer

New York Chapter—Guests at the season's final meeting, May 11, heard Vincent T. Malcolm, director of research at the Chapman Valve Co., who presented a most illuminating talk on the problems of valve manufacture. In his introduction, Mr. Malcolm sketched valve history from the ancient lead and bronze valves found in the ruins of Pompeii (A.D. 79) to the metallurgical triumphs of today that must meet a variety of extreme conditions of temperature, pressure, corrosion, abrasion and shock.

The first globe valves were used in Philadelphia in 1810, but gate valves had been used in the New York City water supply in the 17th century. Watt's steam engine used the first steam valves, at 10 psi.

#### Operate at Red Heat

Since then, both pressures and temperatures have steadily increased, modern valves being used up to 6000 psi., and a recent application in the synthetic rubber process calls for 1420° F., literally red-hot! At these temperatures, shredded 18-8, impregnated with asbestos and mica, is used for packing. Odd as it may seem, these valves are jacketed for steam-cooling!

At the high temperatures and pressures, the maintenance of tight joints is a crucial problem. The all-welded construction is the modern approach to this problem, including flanges, bonnets, and seats. At the other end of the scale, the increasing use of low temperatures has brought up problems of an entirely different nature, particularly in relation to shock.

#### Seizure Is Unsolved Problem

The action of high-temperature steam presents a special corrosion problem, called "wire-drawing." Abrasion is another problem, since many processes employ extremely hard suspended particles, for example aluminum silicate.

A problem which as yet has no general solution is that of seizure of moving parts at high temperatures, and the empirical methods of eliminating this difficulty are often contradictory.

The exacting requirements of welding large valves for high pressure, high temperature service, have brought about new techniques and much specialized manufacturing and inspection equipment has been developed. An example of progress in this direction is the arconograph, a new instrument which keeps before the welder a continuous graphic record of the arc, thereby helping him to do better and more uniform work.

#### Impact Tests at -300°

The supervision of all the variables in the manufacture of valves requires a vast amount of research equipment. The usual physical testing equipment is supplemented by apparatus for impact testing down to -300° F. Elaborate equipment is used for measuring creep and relaxation under load.

Control of composition is aided by specially developed spectrographic apparatus. Resistance to corrosion and abrasion is measured in a laboratory devoted to this purpose. Final inspection methods include Magnaflux, X-ray, and radium shadowgraphs.

### WPAC Formed in Louisville (Continued from page 1)

advice to plants engaged in war production. Each society represented will form its own group of technicians to whom questions and problems can be referred.

Firms who would like to avail themselves of the services of the Committee should get in touch with the secretary, Paul R. Oakes, 200 Todd Bldg., Louisville, Ky.; telephone Wa 6552.

## HOTEL RESERVATION FORM

National Metal Congress and  
War Production Edition of the National Metal Exposition

October 12th to 16th, 1942  
CLEVELAND, OHIO

To assist the members, because of the present crowded condition of the Cleveland hotels, and to assure as satisfactory accommodations as possible for the above events, a Housing Bureau has been established under the direction of Mr. Edward C. Brennan, Executive Vice-President of the Cleveland Convention & Visitors Bureau, Terminal Tower, Cleveland. Room rates for seven of the larger downtown hotels are as follows.

Hotel	Guaranteed No. of Rooms	Rooms— One Person with Bath		Rooms—Two Persons with Bath	
		No. of Rooms	Double Bed	Twin Beds	
Allerton .....	165	\$2.50 to \$3.50	\$4.00 to \$5.00	\$5.00	
Auditorium .....	130	2.50 to 3.50	4.00 to 5.50	4.50 to 7.00	
Carter .....	400	2.75 to 5.00	4.25 to 7.00	5.50 to 8.00	
Cleveland .....	600	3.00 to 6.00	4.50 to 6.50	6.00 to 10.00	
Hollenden .....	400	3.00 to 6.00	4.50 to 6.50	5.00 to 10.00	
Olmsted .....	175	2.00 to 3.50	3.50 to 5.00	5.00 to 7.00	
Statler .....	600	3.00 to 6.00	4.50 to 8.00	5.00 to 8.00	

Society Headquarters will be located as follows:

American Society for Metals—Hotel Statler  
American Institute of Mining & Metallurgical Engineers—Hotel Statler  
American Welding Society—Hotel Cleveland  
Wire Association—Hotel Carter

All room reservations should be mailed direct to the Housing Bureau. Use the coupon below. Detach Here and Mail to

## HOTEL RESERVATION BLANK

National Metal Congress and  
War Production Edition of National Metal Exposition

Mr. Edward C. Brennan, Chairman  
Housing Bureau, National Metal Congress  
Room 1604, Terminal Tower  
Cleveland, Ohio

(Date) ..... 1942

Please make hotel reservations as noted below.

....Room(s) with bath for one person each Room rate desired \$..... to \$.....  
....Room(s) with bath for two persons each Room rate desired \$..... to \$.....  
    (double bed)  
....Room(s) with bath for two persons each Room rate desired \$..... to \$.....  
    (twin beds)  
....Parlor with...connecting bedroom(s) Room rate desired \$..... to \$.....

Arriving October....., hour..... A. M. .... P. M. Leaving.....

First Choice Hotel .....

Second Choice Hotel .....

Third Choice Hotel .....

If the hotel of first choice is unable to accept your reservation, the Housing Bureau will endeavor to comply with your second or third choices in the order named. You will receive confirmation direct from the Housing Bureau notifying you of your assignment.

(Applicant's cooperation in supplying information as to probable date of arrival and leaving is requested, but no obligation will be incurred in doing so.)

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